

What is claimed is

1           1. A WDM (Wavelength Division Multiplexed)  
2 transmission system, comprising:  
3           a plurality of WDM optical networks, each of  
4 said WDM optical network including  
5           an optical signal receiver, and  
6           an optical signal transmitter,  
7           communicably connected to said optical  
8 signal receiver, for transmitting, to said  
9 optical signal receiver, a WDM signal having  
10 a plurality of optical signals at respective  
11 different wavelengths with adjusting each  
12 of intensities of said plural optical  
13 signals by performing preemphasis; and  
14 a central controller, communicably connected  
15 to said plural WDM optical networks via a plurality  
16 of monitor/control lines respectively, including:  
17           variation factor monitoring means for  
18 monitoring one or more variation factors which  
19 requires a new setting for said preemphasis  
20 performed by said optical signal transmitter  
21 of each said WDM optical network via a  
22 respective one of the plural monitor/control  
23 lines; and  
24           preemphasis controlling means for  
25 controlling controlling a status of said

26           preemphasis by adjusting said setting for said  
27           preemphasis performed by said optical signal  
28           transmitter of each said WDM optical network  
29           via the respective monitor/control line based  
30           on the result of the monitoring carried out  
31           by said variation factor monitoring means.

1           2. A WDM transmission system according to  
2 claim 1, wherein:

3           said central controller further includes  
4 storing means for storing intensity information of  
5 intensities of the optical signals at the respective  
6 different wavelengths, which optical signals are  
7 included in the WDM signal output from said optical  
8 signal transmitter of each said WDM optical network  
9 when an initialization for amounts of said  
10 preemphasis is performed, and time information of  
11 the time when said initialization is performed;  
12           said variation factor monitoring means  
13 includes elapsed-time monitoring means for  
14 monitoring, as one of said variation factors,  
15 whether or not a predetermined time period has passed  
16 since an initialization of a first optical signal  
17 transmitter, which is the optical signal transmitter  
18 of one of said plural WDM optical networks based  
19 on said time information stored in said storing  
20 means; and

21           said preemphasis controlling means includes  
22   intensity controlling means for controlling, if the  
23   result of said monitoring by said elapsed-time  
24   monitoring means is positive, intensities of optical  
25   signals in a WDM signal that is to be output from  
26   said first optical signal transmitter by adjusting  
27   amounts of said preemphasis performed by said first  
28   optical signal transmitter in such a manner that  
29   said last-named intensities of said first optical  
30   signal transmitter become identical with those when  
31   said initialization is performed, based on said  
32   intensity information stored in said storing means.

1           3. A WDM transmission system according to  
2   claim 2, wherein

3           said variation factor monitoring means of  
4   said central controller further includes:

5                 the-number-of-wavelengths-  
6                 information collecting means for collecting,  
7                 as one of said variation factors,  
8                 the-number-of-wavelengths information about  
9                 the number of wavelengths used for optical  
10                signals of the WDM signal transmitted in said  
11                each WDM optical network, and

12                the-number-of-wavelengths monitoring  
13                means for monitoring whether or not there is  
14                a change in the number of wavelengths used

15           for optical signals of the WDM signal  
16           transmitted in a first WDM optical network,  
17           which is the WDM optical network one of said  
18           plural WDM optical networks, based on said  
19           the-number-of-wavelengths information,  
20           which has been collected by said  
21           the-number-of-wavelengths collecting means;  
22           and

23           said preemphasis controlling means of said  
24 central controller includes:

25           amount-of-preemphasis computing means  
26           for computing, if the result of said  
27           last-named monitoring by said  
28           the-number-of-wavelengths monitoring means  
29           is positive, amounts of preemphasis that is  
30           to be performed on the plurality optical  
31           signals of the WDM signal in said first optical  
32           network in accordance with the change in the  
33           number of wavelengths, which change is  
34           monitored as said the-number-of- wavelengths  
35           information by said wavelength monitoring  
36           means, and

37           amount-of-preemphasis controlling means  
38           for controlling an optical signal transmitter  
39           said first WDM optical network in such a manner  
40           that said first particular WDM optical network  
41           performs preemphasis of the last-named

42           amounts, which has been computed by said  
43           amount-of-preemphasis computing means.

1           4. A WDM transmission system according to  
2        claim 3, wherein

3           said variation factor monitoring means of  
4        said central controller includes:

5           signal-quality-information collecting  
6        means for collecting, as one of said variation  
7        factors, signal quality information about a  
8        quality of WDM signal, which is transmitted  
9        in said each WDM optical network, at the time  
10      when being received by said individual optical  
11      receiver therein,

12          threshold-value-information retaining  
13        means for retaining threshold value  
14        information of threshold values of qualities  
15        of said WDM signal transmitted in said each  
16        WDM optical networks, and

17          signal-quality monitoring means for  
18        monitoring whether or not said signal quality  
19        information for a second WDM optical network,  
20        which is the WDM optical network one of said  
21        plural WDM optical networks, is equal to or  
22        smaller than said threshold value for said  
23        particular WDM optical network, which  
24        information is retained in said

25           threshold-value-information retaining  
26        means; and  
27           said preemphasis controlling means of said  
28        central controller includes quality controlling  
29        means for controlling, if the result of last-named  
30        monitoring by said signal-quality monitoring means  
31        is positive, the intensities of optical signals in  
32        a WDM signal that is to be transmitted in said second  
33        WDM optical network by adjusting amounts of  
34        preemphasis that is to be performed on said second  
35        WDM optical network in such a manner that signal  
36        quality information of the last-named WDM signal  
37        transmitted in said second WDM optical network  
38        becomes greater than said last-named threshold  
39        value.

1           5. A WDM transmission system according to  
2        claim 4, wherein said signal-quality-information  
3        collecting means periodically collects said signal  
4        quality information.

1           6. A WDM transmission system according to  
2        claim 4, wherein  
3           said variation factor monitoring means of  
4        said central controller further includes  
5        alarm-information receiving means for receiving,  
6        as one of said variation factors, alarm information

7 of an alarm issued over the WDM signal transmitted  
8 in each said WDM optical network; and  
9               said signal-quality-information collecting  
10 means starts, upon receipt of said alarm by said  
11 alarm receiving means, the collecting of said signal  
12 quality information of the WDM signal transmitted  
13 in each said optical network, which issued said  
14 received alarm information.

1               7. A WDM transmission system according to  
2 claim 5, wherein

3               said variation factor monitoring means of  
4 said central controller further includes  
5 alarm-information receiving means for receiving,  
6 as one of said variation factors, alarm information  
7 of an alarm issued over the WDM signal transmitted  
8 in each said WDM optical network; and

9               said signal-quality-information collecting  
10 means starts, upon receipt of said alarm by said  
11 alarm receiving means, the collecting of said signal  
12 quality information of the WDM signal transmitted  
13 in each said optical network, which issued said  
14 received alarm information.

1               8. A WDM transmission system according to  
2 claim 2, wherein  
3 said variation factor monitoring means of said

4 central controller includes:

5 signal-quality-information collecting  
6 means for collecting, as one of said variation  
7 factors, signal quality information about a  
8 quality of WDM signal, which is transmitted  
9 in said each WDM optical network, at the time  
10 when being received by said individual optical  
11 receiver therein,

12 threshold-value-information retaining  
13 means for retaining threshold value  
14 information of threshold values of qualities  
15 of said WDM signal transmitted in said each  
16 WDM optical networks, and

17 signal-quality monitoring means for  
18 monitoring whether or not said signal quality  
19 information for a second WDM optical network,  
20 which is the WDM optical network one of said  
21 plural WDM optical networks, is equal to or  
22 smaller than said threshold value for said  
23 particular WDM optical network, which  
24 information is retained in said  
25 threshold-value-information retaining  
26 means; and

27 said preemphasis controlling means of said  
28 central controller includes quality controlling  
29 means for controlling, if the result of last-named  
30 monitoring by said signal-quality monitoring means

31   is positive, the intensities of optical signals in  
32   a WDM signal that is to be transmitted in said second  
33   WDM optical network by adjusting amounts of  
34   preemphasis that is to be performed on said second  
35   WDM optical network in such a manner that signal  
36   quality information of the last-named WDM signal  
37   transmitted in said second WDM optical network  
38   becomes greater than said last-named threshold  
39   value.

1                 9. A WDM transmission system according to  
2    claim 8, wherein said signal-quality-information  
3    collecting means periodically collects said signal  
4    quality information.

1                 10. A WDM transmission system according to  
2    claim 8, whrerein  
3                         said variation factor monitoring means of  
4    said central controller further includes  
5    alarm-information receiving means for receiving,  
6    as one of said variation factors, alarm information  
7    of an alarm issued over the WDM signal transmitted  
8    in each said WDM optical network; and  
9                         said signal-quality-information collecting  
10   means starts, upon receipt of said alarm by said  
11   alarm receiving means, the collecting of said signal  
12   quality information of the WDM signal transmitted

13       in each said optical network, which issued said  
14       received alarm information.

1           11. A WDM transmission system according to  
2       claim 9, whrerein

3               said variation factor monitoring means of  
4       said central controller further includes  
5       alarm-information receiving means for receiving,  
6       as one of said variation factors, alarm information  
7       of an alarm issued over the WDM signal transmitted  
8       in each said WDM optical network; and

9               said signal-quality-information collecting  
10      means starts, upon receipt of said alarm by said  
11      alarm receiving means, the collecting of said signal  
12      quality information of the WDM signal transmitted  
13      in each said optical network, which issued said  
14      received alarm information.

1           12. A WDM transmission system according to  
2       claim 1, whrerein

3               said variation factor monitoring means of  
4       said central controller further includes:  
5                 the-number-of-wavelengths-  
6                 information collecting means for collecting,  
7                 as one of said variation factors,  
8                 the-number-of-wavelengths information about  
9                 the number of wavelengths used for optical

10 signals of the WDM signal transmitted in said  
11 each WDM optical network, and  
12 the-number-of-wavelengths monitoring  
13 means for monitoring whether or not there is  
14 a change in the number of wavelengths used  
15 for optical signals of the WDM signal  
16 transmitted in a first WDM optical network,  
17 which is the WDM optical network one of said  
18 plural WDM optical networks, based on said  
19 the-number-of-wavelengths information,  
20 which has been collected by said  
21 the-number-of-wavelengths collecting means;  
22 and  
23 said preemphasis controlling means of said  
24 central controller includes:  
25 amount-of-preemphasis computing means  
26 for computing, if the result of said  
27 last-named monitoring by said  
28 the-number-of-wavelengths monitoring means  
29 is positive, amounts of preemphasis that is  
30 to be performed on the plurality optical  
31 signals of the WDM signal in said first optical  
32 network in accordance with the change in the  
33 number of wavelengths, which change is  
34 monitored as said the-number-of-wavelengths  
35 information by said wavelength monitoring  
36 means, and

37                   amount-of-preemphasis controlling means  
38                   for controlling an optical signal transmitter  
39                   said first WDM optical network in such a manner  
40                   that said first particular WDM optical network  
41                   performs preemphasis of the last-named  
42                   amounts, which has been computed by said  
43                   amount-of-preemphasis computing means.

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1                   13. A WDM transmission system according to  
2 claim 12, whrerein  
3                   said variation factor monitoring means of  
4 said central controller includes:

5                   signal-quality-information collecting  
6                   means for collecting, as one of said variation  
7                   factors, signal quality information about a  
8                   quality of WDM signal, which is transmitted  
9                   in said each WDM optical network, at the time  
10                  when being received by said individual optical  
11                  receiver therein,

12                  threshold-value-information retaining  
13                  means for retaining threshold value  
14                  information of threshold values of qualities  
15                  of said WDM signal transmitted in said each  
16                  WDM optical networks, and

17                  signal-quality monitoring means for  
18                  monitoring whether or not said signal quality

19           information for a second WDM optical network,  
20        which is the WDM optical network one of said  
21        plural WDM optical networks, is equal to or  
22        smaller than said threshold value for said  
23        particular WDM optical network, which  
24        information is retained in said  
25        threshold-value-information retaining  
26        means; and

27           said preemphasis controlling means of said  
28        central controller includes quality controlling  
29        means for controlling, if the result of last-named  
30        monitoring by said signal-quality monitoring means  
31        is positive, the intensities of optical signals in  
32        a WDM signal that is to be transmitted in said second  
33        WDM optical network by adjusting amounts of  
34        preemphasis that is to be performed on said second  
35        WDM optical network in such a manner that signal  
36        quality information of the last-named WDM signal  
37        transmitted in said second WDM optical network  
38        becomes greater than said last-named threshold  
39        value.

1           14. A WDM transmission system according to  
2        claim 13, wherein said signal-quality-information  
3        collecting means periodically collects said signal  
4        quality information.

1           15. A WDM transmission system according to  
2 claim 13, whrerein

3           said variation factor monitoring means of  
4 said central controller further includes  
5 alarm-information receiving means for receiving,  
6 as one of said variation factors, alarm information  
7 of an alarm issued over the WDM signal transmitted  
8 in each said WDM optical network; and

9           said signal-quality-information collecting  
10 means starts, upon receipt of said alarm by said  
11 alarm receiving means, the collecting of said signal  
12 quality information of the WDM signal transmitted  
13 in each said optical network, which issued said  
14 received alarm information.

1           16. A WDM transmission system according to  
2 claim 14, whrerein

3           said variation factor monitoring means of  
4 said central controller further includes  
5 alarm-information receiving means for receiving,  
6 as one of said variation factors, alarm information  
7 of an alarm issued over the WDM signal transmitted  
8 in each said WDM optical network; and

9           said signal-quality-information collecting  
10 means starts, upon receipt of said alarm by said  
11 alarm receiving means, the collecting of said signal  
12 quality information of the WDM signal transmitted

13   in each said optical network, which issued said  
14   received alarm information.

1                 17. A WDM transmission system according to  
2   claim 1, whrerein

3                 said variation factor monitoring means of  
4   said central controller includes:

5                 signal-quality-information collecting  
6   means for collecting, as one of said variation  
7   factors, signal quality information about a  
8   quality of WDM signal, which is transmitted  
9   in said each WDM optical network, at the time  
10  when being received by said individual optical  
11  receiver therein,

12                 threshold-value-information retaining  
13   means for retaining threshold value  
14   information of threshold values of qualities  
15   of said WDM signal transmitted in said each  
16   WDM optical networks, and

17                 signal-quality monitoring means for  
18   monitoring whether or not said signal quality  
19   information for a second WDM optical network,  
20   which is the WDM optical network one of said  
21   plural WDM optical networks, is equal to or  
22   smaller than said threshold value for said  
23   particular WDM optical network, which  
24   information is retained in said

25           threshold-value-information retaining  
26        means; and  
27           said preemphasis controlling means of said  
28 central controller includes quality controlling  
29 means for controlling, if the result of last-named  
30 monitoring by said signal-quality monitoring means  
31 is positive, the intensities of optical signals in  
32 a WDM signal that is to be transmitted in said second  
33 WDM optical network by adjusting amounts of  
34 preemphasis that is to be performed on said second  
35 WDM optical network in such a manner that signal  
36 quality information of the last-named WDM signal  
37 transmitted in said second WDM optical network  
38 becomes greater than said last-named threshold  
39 value.

1           18. A WDM transmission system according to  
2 claim 17, whrerein said signal-quality-information  
3 collecting means periodically collects said signal  
4 quality information.

1           19. A WDM transmission system according to  
2 claim 17, whrerein  
3           said variation factor monitoring means of  
4 said central controller further includes  
5 alarm-information receiving means for receiving,  
6 as one of said variation factors, alarm information

7       of an alarm issued over the WDM signal transmitted  
8       in each said WDM optical network; and  
9                said signal-quality-information collecting  
10      means starts, upon receipt of said alarm by said  
11      alarm receiving means, the collecting of said signal  
12      quality information of the WDM signal transmitted  
13      in each said optical network, which issued said  
14      received alarm information.

1               20. A WDM transmission system according to  
2       claim 18, wherein  
3                said variation factor monitoring means of  
4       said central controller further includes  
5       alarm-information receiving means for receiving,  
6       as one of said variation factors, alarm information  
7       of an alarm issued over the WDM signal transmitted  
8       in each said WDM optical network; and  
9                said signal-quality-information collecting  
10      means starts, upon receipt of said alarm by said  
11      alarm receiving means, the collecting of said signal  
12      quality information of the WDM signal transmitted  
13      in each said optical network, which issued said  
14      received alarm information.

1               21. A central controller, which is  
2       communicably connected, via a plurality of  
3       monitor/control lines respectively, to each of a

4 plurality of WDM (Wavelength Division Multiplexed)  
5 optical networks, each of the WDM optical network  
6 including an optical signal receiver and an optical  
7 signal transmitter, communicably connected to the  
8 optical signal receiver, for transmitting, to the  
9 optical signal receiver, a WDM signal having a  
10 plurality of optical signals at respective different  
11 wavelengths with adjusting each of intensities of  
12 the plural optical signals by performing preemphasis,  
13 said controller comprising:

14 variation factor monitoring means for  
15 monitoring one or more variation factors which  
16 requires a new setting for said preemphasis  
17 performed by the optical signal transmitter of each  
18 of the WDM optical networks; and

19 preemphasis controlling means for  
20 controlling controlling a status of said preemphasis  
21 by adjusting said setting for said preemphasis  
22 performed by the optical signal transmitter of each  
23 of the WDM optical networks via respective one of  
24 the plural monitor/control lines based on the result  
25 of the monitoring carried out by said variation  
26 factor monitoring means.

1 22. A method for controlling preemphasizes in  
2 a WDM (Wavelength Division Multiplexed)  
3 transmission system comprising a plurality of WDM

4       optical networks, each of the WDM optical networks  
5       including an optical signal receiver and an optical  
6       signal transmitter, communicably connected to the  
7       optical signal receiver, for transmitting, to the  
8       optical signal receiver, a WDM signal having a  
9       plurality of optical signals at respective different  
10      wavelengths, with adjusting each of intensities of  
11      the plural optical signals by performing  
12      preemphasis, and a central controller communicably  
13      connected to each of the plural WDM optical networks  
14      via a plurality of monitor/control lines  
15      respectively, said method comprising the steps of:  
16                  at the central controller  
17                          (a) monitoring one or more variation factors  
18                  which requires a new setting for said preemphasis  
19                  performed by the optical signal transmitter of each  
20                  of the WDM optical networks; and  
21                          (b) controlling controlling a status of said  
22                  preemphasis by adjusting the setting for said  
23                  preemphasis performed by the optical signal  
24                  transmitter of each of the WDM optical networks via  
25                  a respective one of the plural monitor/control lines  
26                  based on the result of the monitoring in said  
27                  variation factor monitoring step (a).

1                  23. A method for controlling preemphasis  
2       according to claim 22, further comprising the steps

3       of:

4               at a storing means

5               storing intensity information of intensities

6       of the optical signals at the respective different

7       wavelengths are included in the WDM signal output

8       from the optical signal transmitter of each of the

9       plural WDM signal networks when an initialization

10      for amounts of said preemphasis is performed, and

11      time information of the time when the intialization

12      is performed,

13               said variation factors monitoring step (a)

14     including the step of(a-1) monitoring whether or

15     not a predetermined time period has passed since

16     an initialization of a first optical signal

17     transmitter, which is the optical signal transmitter

18     of one of the plural WDM optical networks based on

19     the time information stored in said storing step,

20               said optical transmitters controlling step

21     (b) including the step of (b-1) controlling, if the

22     result of said monitoring by said monitoring step

23     (a-1) is positive, intensities of optical signals

24     in a WDM signal that is to be output from a first

25     optical signal transmitter by adjusting amounts of

26     said preemphasis performed by the first optical

27     signal transmitter in such a manner that the

28     last-named intensities of the optical signals of

29     the first optical signal transmitter become

30 identical with those when the initialization is  
31 performed, based on the intensity information stored  
32 in said storing step.

1           24. A method for controlling preemphasis  
2 according to claim 23,

3           said variation factors monitoring steps (a)  
4 further including the step of (a-2) monitoring, as  
5 one of the variation factors, whether or not there  
6 is a change in the number of wavelengths used for  
7 optical signals in the individual WDM signal  
8 transmitted in a first particular WDM optical  
9 network, which is the WDM optical network of one  
10 of the plural WDM networks, by collecting  
11 information about the number of optical signals in  
12 the WDM signal transmitted in the first WDM optical  
13 network; and

14           said optical transmitters controlling step  
15 (b) including the steps of:

16           (b-2) computing, if the result of said  
17 last-named monitoring step is positive,  
18 amounts of preemphasis that is to be performed  
19 on a plurality of optical signals of a WDM  
20 signal in the first optical network in  
21 accordance with the change in the number of  
22 optical signals, which is monitored in said  
23 last-named monitoring step (a-2), and

1               25. A method for controlling preemphasis  
2 according to claim 23, further comprising the step  
3 of collecting, as one of the variation factors,  
4 signal quality information about quality of the WDM  
5 signal transmitted in each of the WDM optical  
6 networks.

7 said variation factors monitoring step (a)  
8 further including the step of (a-3) monitoring  
9 whether or not the signal quality information of  
10 a second WDM optical network, which is the WDM optical  
11 network one of the plural WDM optical networks, are  
12 equal to or smaller than threshold value previously  
13 set for the second WDM network; and

14               said optical transmitter controlling step  
15 (b) further including the step of (b-4) controlling,  
16 if the result of monitoring in said last-named  
17 monitoring step (a-3) is positive, the intensities  
18 of optical signals in a WDM signal that is to be  
19 transmitted in the second optical transmitter in  
20 the second particular WDM network by adjusting

21 amounts of preemphasis that is to be performed on  
22 the second WDM optical network in such a manner that  
23 said signal quality of the last-named WDM signal  
24 transmitted in the second WDM optical network  
25 becomes greater than the last-named threshold value  
26 for the second optical network.

1           26. A method for controlling preemphasis  
2 according to claim 24, further comprising the step  
3 of collecting, as one of the variation factors,  
4 signal quality information about quality of the WDM  
5 signal transmitted in each of the WDM optical  
6 networks,

7           said variation factors monitoring step (a)  
8 further including the step of (a-3) monitoring  
9 whether or not the signal quality information of  
10 a second WDM optical network, which is the WDM optical  
11 network one of the plural WDM optical networks, are  
12 equal to or smaller than threshold value previously  
13 set for the second WDM network; and

14           said optical transmitter controlling step  
15 (b) further including the step of (b-4) controlling,  
16 if the result of monitoring in said last-named  
17 monitoring step (a-3) is positive, the intensities  
18 of optical signals in a WDM signal that is to be  
19 transmitted in the second optical transmitter in  
20 the second particular WDM network by adjusting

21 amounts of preemphasis that is to be performed on  
22 the second WDM optical network in such a manner that  
23 said signal quality of the last-named WDM signal  
24 transmitted in the second WDM optical network  
25 becomes greater than the last-named threshold value  
26 for the second optical network.

1           27. A method for controlling preemphasis  
2 according to claim 22, further comprising the steps  
3 of:

4           said variation factors monitoring steps (a)  
5 further including the step of (a-2) monitoring, as  
6 one of the variation factors, whether or not there  
7 is a change in the number of wavelengths used for  
8 optical signals in the individual WDM signal  
9 transmitted in a first particular WDM optical  
10 network, which is the WDM optical network of one  
11 of the plural WDM networks, by collecting  
12 information about the number of optical signals in  
13 the WDM signal transmitted in the first WDM optical  
14 network; and

15           said optical transmitters controlling step  
16 (b) including the steps of :

17           (b-2) computing, if the result of  
18 said last-named monitoring step is positive,  
19 amounts of preemphasis that is to be performed  
20 on a plurality of optical signals of a WDM

21 signal in the first optical network in  
22 accordance with the change in the number of  
23 optical signals, which is monitored in said  
24 last-named monitoring step (a-2), and  
25 (b-3) controlling a optical transmitter  
26 of the first WDM optical network in such a  
27 manner that the first particular network  
28 performs preemphasis of the last-named  
29 amounts, which has been computed in said  
30 amout-of-preemphasis computing step (b-2).

1 28. A method for controlling  
2 preemphasis accprding to claim 27, further  
3 comprising the step of collecting, as one of  
4 the variation factors, signal quality  
5 information about quality of the WDM signal  
6 transmitted in each of the WDM optical networks,  
7 said variation factors monitoring step  
8 (a) further including the step of (a-3)  
9 monitoring whether or not the signal quality  
10 information of a second WDM optical network,  
11 which is the WDM optical network one of the  
12 plural WDM optical networks, are equal to or  
13 smaller than threshold value previously set for  
14 the second WDM network; and  
15 said optical transmitter controlling  
16 step (b) further including the step of (b-4)

17 controlling, if the result of monitoring in said  
18 last-named monitoring step (a-3) is positive,  
19 the intensities of optical signals in a WDM  
20 signal that is to be transmitted in the second  
21 optical transmitter in the second particular  
22 WDM network by adjusting amounts of preemphasis  
23 that is to be performed on the second WDM optical  
24 network in such a manner that said signal quality  
25 of the last-named WDM signal transmitted in the  
26 second WDM optical network becomes greater than  
27 the last-named threshold value for the second  
28 optical network.

1           29. A method for controlling  
2 preemphasis according to claim 22, further  
3 comprising the step of collecting, as one of  
4 the variation factors, signal quality  
5 information about quality of the WDM signal  
6 transmitted in each of the WDM optical networks,  
7           said variation factors monitoring step  
8 (a) including the step of (a-3) monitoring  
9 whether or not the signal quality information  
10 of a second WDM optical network, which is the  
11 WDM optical network one of the plural WDM optical  
12 networks, are equal to or smaller than threshold  
13 value previously set for the second WDM network;  
14 and

15           said optical transmitter controlling  
16 step (b) including the step of (b-4) controlling,  
17 if the result of monitoring in said last-named  
18 monitoring step (a-3) is positive, the  
19 intensities of optical signals in a WDM signal  
20 that is to be transmitted in the second optical  
21 transmitter in the second particular WDM  
22 network by adjusting amounts of preemphasis  
23 that is to be performed on the second WDM optical  
24 network in such a manner that said signal quality  
25 of the last-named WDM signal transmitted in the  
26 second WDM optical network becomes greater than  
27 the last-named threshold value for the second  
28 optical network.

1           30. A method for controlling  
2 preemphasis according to claim 22,  
3           said variation factors monitoring step  
4 (a) including the step of  
5           (a-4) receiving, as one of said  
6 variation factors, alarm information  
7 about an alarm issued over the WDM signal  
8 transmitted in each of the plural WDM  
9 optical networks; and  
10          (a-5) collecting, upon receipt said  
11 alarm information in said alarm  
12 receiving step (a-4), said signal

13           quality information of the last-named  
14           WDM signal.